

AMENDMENT TO THE CLAIMS

1-16. (canceled)

17. (currently amended): A radar level transmitter for providing level detection of materials in a container, the transmitter comprising:

- an antenna;
- a transceiver coupled to the antenna and configured to transmit a microwave pulse having a transmit pulse amplitude using the antenna and produce a signal representing reflected wave pulses;
- a microprocessor system coupled to the transceiver and adapted to control the transceiver and process the signal;
- a threshold calculation module executable by the microprocessor system and adapted to receive information related to properties of the materials and calculate a first threshold value as a function of the transmit pulse amplitude and the information related to properties of the materials; and
- a level calculation module executable by the microprocessor system and adapted to establish a level of a first material interface using the signal and the first threshold value.

18. (currently amended): The radar level transmitter of claim 17, wherein:

- the threshold calculation module is further adapted to calculate a second threshold value as a function of the transmit pulse amplitude and the information related to properties of the materials; and
- the level calculation module is further adapted to calculate

a level of a second material interface using the signal and the second threshold value.

19. (previously presented): The radar level transmitter of claim 17, including an input/output port adapted to transmit a level output that is indicative of the first material interface.

20. (previously presented): The radar level transmitter of claim 17, including a dielectric constant calculator adapted to calculate a dielectric parameter relating to one of the properties of the materials as a function of the transmit pulse amplitude and a first reflected wave pulse corresponding to a portion of the microwave pulse reflected at the first material interface, and provide the dielectric parameter to the threshold calculation module for use in establishing the level of the first material interface.

21-24. (canceled)

25. (currently amended): The method radar level transmitter of claim 2417, wherein the estimated first threshold reflected pulse amplitude is further calculated as a function of at least one of an attenuation factor and a range factor.

26. (currently amended): The radar level transmitter~~method~~ of claim 2417 ~~including calculating the estimated first reflected pulse amplitude as a further function of~~ wherein the information related to properties of the materials comprises:

~~a first dielectric parameter having a value corresponding to a dielectric of a first material adjacent to the an~~  
antenna; and

a second dielectric parameter having a value corresponding to a dielectric of a second material located below the first material.

27-28. (canceled)

29. (currently amended): The radar level transmitter~~method~~ of claim 2726, wherein the threshold calculation module further calculates a second threshold value~~further comprising calculating an estimated second reflected pulse amplitude as a function of the reference amplitude, the correction factor, the first dielectric parameter, the second dielectric parameter, and a third dielectric parameter having a value corresponding to a dielectric of a third material located below the second material.~~

30. (canceled)

31. (currently amended): The radar level transmitter~~method~~ of claim 29, wherein the estimated second reflected pulse amplitude~~threshold~~ is further calculated as a function of at least one of an attenuation factor and a range factor.

32. (currently amended): The radar level transmitter~~method~~ of claim 2717, wherein the threshold calculation module further comprising calculating calculates a fiducial threshold value formed between the antenna and a first material~~n estimated fiducial pulse amplitude as a function of the reference amplitude, the correction factor, and the first dielectric parameter.~~

33. (canceled)

34. (currently amended): The radar level transmitter~~method~~ of claim 32, wherein the ~~estimated fiducial pulse amplitude~~threshold value is further calculated as a function of at least one of an attenuation factor and a range factor.

35. (currently amended): A ~~method for automatically setting threshold values for use by a microwave level transmitter to detect reflected pulses corresponding to portions of a transmitted microwave pulse, the method comprising~~The radar level transmitter of claim 17 wherein the threshold calculation module calculates the first threshold based upon:

selecting a first dielectric parameter corresponding to a dielectric of a first material adjacent ~~an~~the antenna; setting a reference amplitude relating to the transmitted microwave pulse amplitude; and setting a second dielectric parameter to a value corresponding to a dielectric of a second material located below the first material; calculating a first pulse amplitude as a function of the reference amplitude, and the first and second dielectric parameters; and setting a first threshold value as a function of the calculated first pulse amplitude.

36. (canceled)

37. (currently amended): The radar level transmitter ~~method~~ of claim 3517, wherein the first threshold value is further a function of at least one of an attenuation factor, a range factor, an offset value, and temperature.

38. (canceled)

39. (currently amended): The radar level transmitter~~method~~ of claim 3517 ~~including setting a correction factor, wherein the first threshold~~~~pulse amplitude~~ is calculated as a function of the a correction factor.

40-42. (canceled)

43. (new) The radar level transmitter of claim 17 wherein the information related to properties of the materials is received from an operator.

44. (new) The radar level transmitter of claim 17 wherein the information related to properties of the materials is received over a process control loop.

45. (new) The radar level transmitter of claim 17 wherein the first threshold is further calculated as a function of a temperature.